

REMARKS

The Office Action dated January 23, 2004 has been received and carefully noted. The above amendments to claims, and the following remarks, are submitted as a full and complete response thereto. No new matter has been entered through these amendments. Claims 15-28 are pending in the instant application and are again respectfully submitted for consideration.

Applicants wish to thank the Examiner for extending the courtesy of an interview at the U.S. Patent and Trademark Office on March 10, 2004. During that interview, the Examiner agreed that the cited prior art references failed to teach all of the elements of the invention as claimed. Consideration of that finding is respectfully requested in the discussion of the issues raised in the prior Office Action.

Claims 15-27 were rejected under 35 U.S. C. §112, second paragraph, as being indefinite. Claims 15-17, 20, 22 and 24 have been amended to more particularly point out and claim the present invention. Applicants have amended the claims to comply with the Examiner's suggestion of the substitution of "associated with" for "produced by" in claims 15-27. Applicants have also amended claim 24 to address an antecedent basis issue with elements of that claim. Applicants respectfully assert that claims 15-28 are now definite under 35 U.S. C. §112, second paragraph, and request reconsideration and withdrawal of the prior rejections.

The Office Action also indicated that the rejections of the claims over prior art, made previously, were maintained. Claims 15, 17 and 28 were rejected under 35 U.S.C.

§102(b) as being clearly anticipated by *Cielo et al.* (U.S. Patent No. 3,694,726). Claims 15, 17, 24, 26 and 28 were rejected under 35 U.S.C. §102(b) as being clearly anticipated by *Bloom* (U.S. Patent No. 4,864,478 or 4,961,128). Claims 16, 18-20 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over either *Cielo et al.* or *Bloom*. Claims 22 was rejected under 35 U.S.C. §103(a) as being unpatentable over either *Cielo et al.* or *Bloom* in view of *Barrett* (U.S. Patent No. 5,737,203). Claims 23 was rejected under 35 U.S.C. §103(a) as being unpatentable over either *Cielo et al.* or *Bloom* in view of *Morris* (U.S. Patent No. 5,555,494). The above rejections are respectfully traversed according to the remarks that follow.

The present invention is directed to, as embodied in independent claim 15, a chopper-type direct-current converter. The converter includes a magnetic core, which has a first and a second side leg, the ends of which are connected to each other with end pieces, and a center leg provided with an air gap and connected to the end pieces between the first and second side legs. Around the magnetic core are arranged a primary winding, a secondary winding and a secondary side filter coil. The filter coil is wound around the center leg and the primary and secondary windings are wound around the side legs so that the resulting magnetic fluxes associated with the primary and secondary windings flow in the same direction in the side legs, and so that the magnetic return flux flows in the same direction in the center leg as the magnetic flux associated with the filter coil.

The present invention is also directed to, as embodied in independent claim 28, a chopper-type regulator. The regulator includes a magnetic core, which includes a first

and a second side leg, the ends of which are connected to each other with end pieces and a center leg provided with an air gap and connected to the end pieces between the first and second side legs. Around the magnetic core are arranged two windings and a filter coil. The filter coil is disposed around the center leg and the windings are disposed around the side legs so that the magnetic flux associated with them flow in the same direction with the magnetic flux of the filter coil.

Applicants respectfully assert that the above referenced magnetic fluxes provided by the various windings and their directions are what constitute an important aspect of the present invention. Applicants respectfully assert that both *Cielo et al.* or *Bloom* fail to teach or suggest such an arrangement.

As discussed in the instant specification, at page 19, lines 21-30, the solution of the present invention combines the magnetic paths of the magnetic components of the power source with two transformers T1 & T2 and an output filter coil Sc. By combining the magnetic paths, an integrated construction is achieved in which only one magnetic core M is needed instead of three cores as in the older solution. The filter coil is disposed around the center leg and the primary and secondary windings are disposed around the side legs so that the magnetic flux, associated with the primary and secondary windings, in the center leg flows in the same direction as the *magnetic flux associated with the filter coil*.

As discussed in the Interview Summary sheet from the Interview of March 10, 2004, neither *Cielo et al.* nor *Bloom* teaches or suggests the use of a filter coil where “the

filter coil is wound around the center leg.” In *Cielo et al.*, the embodiment illustrated in Fig. 3 fails to illustrate a filter coil wound around the center leg. In fact, coils N3 and N4 are indicated as being secondary and primary windings respectively. In *Bloom* ‘128, particularly the embodiment illustrated in Fig. 14, the coils wound around the center leg with the air gap, NL1 and NL2, are not indicated as being filter coils. Additionally, *Bloom* ‘478, in the embodiment illustrated in Fig. 11, shows no coil at all being wound around the center leg with the air gap. As such, Applicants respectfully assert that the rejections of claims applying *Cielo et al.* and *Bloom* are improper and should be withdrawn for failing to teach or suggest all of the elements of claims 15-28.

In addition, Applicants respectfully assert that claims 15-28 are also not obvious in view of *Cielo et al.* and *Bloom*. Independent claims 15 and 28 recite, in part, that the magnetic return flux flows in the same direction in the center leg *as the magnetic flux associated with the filter coil*. Applicants respectfully assert that even if a filter coil were added to the center legs of the converters disclosed in *Cielo et al.* and *Bloom*, it is not clear that the produced magnetic fluxes would have the relationship recited in independent claims 15 and 28. Thus, Applicants respectfully assert that claims 15-28 are also not obvious in view of *Cielo et al.* and *Bloom* and, for this additional reason, any obviousness-type rejection should not be made of the instant claims.

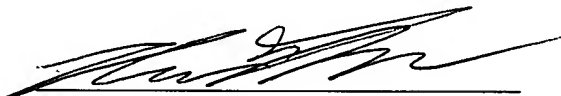
Additionally, *Barrett* and *Morris* were cited in the rejection of claims 22 and 23, but those references do not teach or suggest the configuration of elements provided in independent claims 15 and 28. Similarly, the rejection of claims 16-27 should likewise

be improper for at least their dependence on claim 15. Applicants respectfully request reconsideration and withdrawal of all of the rejections, that claims 15-28 be allowed and that the application be allowed to pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



Kevin F. Turner
Registration No. 43,437

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

KFT:lls